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09/873,238	06/05/2001	Kiyoshi Ueyoko	0229-0645P	5956

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EXAMINER

FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 06/23/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/873,238

Applicant(s)

UEYOKO, KIYOSHI

Examiner

Justin R Fischer

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 6-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3 and 4 is/are allowed.
- 6) ☒ Claim(s) 6-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### DETAILED ACTION

1. Claims 2 and 5 have been cancelled per Amendment A submitted on May 6, 2003.

#### *Priority*

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ian (JP 08-040026, of record) in view of Hanada (JP 05-024418, of record). Ian and Hanada are applied in the same manner as set forth in Paper Number 6, Paragraph 3. As best depicted in Figures 1, 3, and 5, Ian teaches a radial, pneumatic tire construction in which a carcass ply is turned around respective bead cores, such that the radially outer end of said carcass ply terminates against the radially outer surface of said bead cores. In this instance, the radially outer end of said carcass ply extends over at least 80% of the radially outer surface of the respective bead cores. The reference, however, is silent with respect to the inclusion of an organic fiber cord layer that covers the respective bead cores (between radially outer end of said carcass ply and radially outer surface of bead cores). In any event, it is well known in the tire industry to surround a bead core with a covering layer (i.e. organic fiber cord layer) in order to (a) prevent

contact between the carcass cords and the bead reinforcing elements and (b) improve driving stability without reducing ride comfort (high rigidity- attributed to using steel chafers and high hardness bead fillers), as evidenced by Hanada (Paragraphs 2-4). As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to include an organic fiber cord layer in the bead design of Ian, in view of Hanada, for the benefits detailed above.

Regarding claim 1, while Hanada fails to expressly suggest the height of the organic fiber cord layer, it is clearly evident that the distance between the carcass cords and the bead reinforcing elements in Ian would fall within the broad range of the claimed invention. In this instance, applicant requires that the relevant distance be less than 1.0 times the section height of the bead core. As depicted in Figures 1, 3, and 5, the bead cores are formed of about 6 to 8 rows of reinforcing elements (defines bead core section height). The relevant distance, on the other hand, is defined by the lower topping rubber of the carcass, the thickness or height of the organic fiber cord layer, and any rubber in the bead core. As such, one of ordinary skill in the art at the time of the invention would have readily appreciated and expected the relevant distance to be a fraction of the bead core section height since (a) the organic fiber cord layer would be expected to have a height that is approximately equal to a single row of bead reinforcing elements and (b) the remaining part of the relevant distance (topping rubber and bead rubber) would not be expected to produce a total height that exceeds the section height of the bead core.

Additionally, with respect to the claimed thickness of the inner rubber layer (organic fiber cord to bead cord) and the outer rubber layer (organic fiber cord to

carcass cord), Hanada states that a cover or topping rubber can be included to define the organic fiber cord layer (see attached machine translation: Page 2, Paragraph 11). In this instance, the thickness of the inner rubber layer and the outer rubber layer is a function of the cover or topping rubber thickness associated with the organic fiber cord layer. While Hanada fails to expressly suggest a thickness for the inner and outer rubber layer between 0.1 and 0.6 millimeters, it is clearly evident that the organic fiber cord layer, which has the function of preventing contact between the carcass cords and the bead cords and improving driving stability, is a relatively thin ply containing a single layer of reinforcing elements. Thus, based on the function of the organic fiber cord layer, the depiction of the organic fiber cord layer as a thin ply containing a single layer of reinforcing elements, and the recognition in the tire industry that the respective topping rubber thickness is dependent on the diameter of the reinforcing element used therein, one of ordinary skill in the art at the time of the invention would have found it obvious to form a bead reinforcing structure having the claimed thickness between the organic fiber cord layer, the carcass, and the bead core. Lastly, applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed thickness as defined above (reasons given by applicant on Page 8 are not unexpected).

Regarding claims 7 and 8, Figures 1, 3, and 5 of Ian include a reinforcing layer of cords that are disposed radially outside the radially outer part of the carcass ply. The reinforcing layer is formed of cords that are inclined at an angle of approximately 0 degrees (substantially along hoop direction) with respect to the circumferential direction.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Obata (US 4,387,759, of record) in view of Nagai (US 6,135,182, of record), Izumi (JP 11-

321244, of record), and Hanada. Obata, Nagai, Izumi, and Hanada are applied in the same manner as set forth in Paper Number 6, Paragraph 4.

As best depicted in Figure 1, Obata is directed to a pneumatic tire construction in which a carcass turnup portion is arranged between a bead filler and a rubber chafer, wherein said bead filler has a hardness that is equal to or greater than the hardness of said rubber chafer (Column 3, Lines 51-57). Although the reference describes the hardness and not the modulus, the properties have a direct relationship such that a higher modulus equates to a higher hardness and one of ordinary skill in the art at the time of the invention would have expected the modulus values of the claimed invention to be present in Obata as they represent conventional and well known ranges, as evidenced by Nagai (Column 6, Lines 30-33). Thus, Obata in view of Nagai suggest a pneumatic tire construction that is only devoid of (a) a wound carcass turnup portion and (b) an organic fiber cord layer surrounding the respective bead cores. First, as evidenced by Izumi, it is well known to wind a carcass turnup portion versus radially extending it into the middle sidewall region in order to eliminate the buildup of stresses and ultimately enhance bead durability. Second, in view of Hanada, one of ordinary skill in the art at the time of the invention would have found it obvious to include an organic fiber cord layer around each bead core in order to control the spacing between carcass cords and bead reinforcing elements and improve driving stability without significantly increasing rigidity (reduces riding comfort). As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to wind the carcass turnup portion of Obata against the radially outer surface of the respective bead cores, in view of

Izumi, and include an organic fiber cord layer, in view of Hanada, for the benefits detailed above.

Regarding the modification of the carcass turnup portion, it should be noted that Obata recognizes the aforementioned problems of exposed turnup ends, those being the buildup of stresses and propagation of cracks (Column 1, Lines 21-25). In particular, Obata requires the presence of a cover rubber 17 at the turnup end in order to eliminate the aforementioned problems. In view of Izumi, however, the problems are eliminated without the need of an additional rubber layer (facilitates processing and reduces tire weight), such that a gradual decrease in rigidity is still present due to the different rubber compositions used in the bead filler and the rubber chafer. As such, one of ordinary skill in the art at the time of the invention would have been motivated to incorporate the carcass turnup structure of Izumi in the tire design of Obata.

With respect to the inclusion of an organic fiber cord layer, such tire components are extensively used in a variety of tires in order to prevent contact between the carcass cords and the bead reinforcing elements while improving driving stability, as evidenced by Hanada. It should also be noted that Hanada describes embodiments in which more than one organic fiber cord layer is included.

Regarding the distance between the carcass cords and the bead reinforcing elements (claimed as being less than 1.0 times the bead core height), it is clearly evident that the relevant distance would fall within the extremely broad range of the claimed invention since the organic fiber cord layer would not have such an extreme thickness or height to produce a relevant distance that is greater than the section height of the bead core. Additionally, with respect to the claimed thickness of the inner rubber

layer (organic fiber cord to bead cord) and the outer rubber layer (organic fiber cord to carcass cord), Hanada states that a cover or topping rubber can be included to define the organic fiber cord layer (see attached machine translation: Page 2, Paragraph 11). In this instance, the thickness of the inner rubber layer and the outer rubber layer is a function of the cover or topping rubber thickness associated with the organic fiber cord layer. While Hanada fails to expressly suggest a thickness for the inner and outer rubber layer between 0.1 and 0.6 millimeters, it is clearly evident that the organic fiber cord layer, which has the function of preventing contact between the carcass cords and the bead cords and improving driving stability, is a relatively thin ply containing a single layer of reinforcing elements. Thus, based on the function of the organic fiber cord layer, the depiction of the organic fiber cord layer as a thin ply containing a single layer of reinforcing elements, and the recognition in the tire industry that the respective topping rubber thickness is dependent on the diameter of the reinforcing element used therein, one of ordinary skill in the art at the time of the invention would have found it obvious to form a bead reinforcing structure having the claimed thickness between the organic fiber cord layer, the carcass, and the bead core. Lastly, applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed thickness as defined above (reasons given by applicant on Page 8 are not unexpected).

***Allowable Subject Matter***

6. Claims 1, 3, and 4 are allowed. The following is an examiner's statement of reasons for allowance: There was no reference in the prior art search that taught, disclosed, or suggested a pneumatic tire construction comprising a bead apex rubber, a chafer rubber, and a single carcass ply having a turnup portion that extends over at



least 50% of the radially outer face of a bead core (wrapped around bead core), wherein (a) an organic fiber cord layer is disposed between the bead core and the carcass along the radially outer face of said bead core, (b) a reinforcing layer of cords is disposed radially outside of the carcass along the radially outer face of said bead core, (c) said chafer rubber is disposed axially outside of said bead apex rubber, (d) said bead apex rubber has a 100% modulus between 6.3 and 8.6 MPa, and (e) said chafer rubber has a 100% modulus between 5.4 and 8.2 MPa, such the 100% modulus of the bead apex rubber is greater than the 100% modulus of the chafer rubber.

As set forth in the rejections above, Ian and Obata teach a significant portion of the claimed invention, including (a) a bead reinforcing assembly having a carcass turnup portion that extends along the radially outer surface of a bead core and a reinforcing layer formed of circumferential reinforcing elements radially outside said carcass turnup portion and (b) a bead assembly having a carcass turnup portion, a bead apex rubber, and a chafer rubber, such that the 100% modulus of the bead apex rubber is greater than the 100% modulus of the chafer rubber, it being obvious to wrap said carcass turnup portion along the radially outer face of the bead core in view of Izumi. However, in each instance, the references fail to teach the combination of all the claimed limitations ((a) through (e)) and such modifications to the unique and detailed bead assemblies of Ian, which fails to teach limitation (e), and Obata, which fails to teach limitation (b), would not have been obvious to one of ordinary skill in the art at the time of the invention.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

7. As to amended claim 1, applicant states that Ian (JP '026) fails to disclose or suggest (i) the use of a chafer rubber, (ii) the 100% modulus of the chafer rubber, (iii) the 100% modulus of the bead apex rubber, (iv) an inner rubber layer and outer rubber layer having a thickness between 0.1 and 0.6 mm, and (v) the recited distance between the carcass and the bead core. Applicant's argument is persuasive as to amended claim 1, which now includes the limitations of originally drafted claims 1, 2, and 5 and as such, amended claim 1 has been indicated above as being allowable.

Applicant's arguments with respect to claims 6-9 have been considered but are moot in view of the new ground(s) of rejection. In particular, the added limitation of the thickness of the inner and outer rubber layer is suggested by Ian (JP '026) for the reasons given above (Page 4).

No arguments have been presented regarding the rejections involving Obata.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

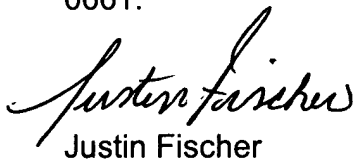
mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(703) 605-4397**. The examiner can normally be reached on M-F (7:30-4:00).

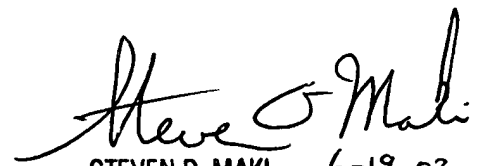
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-

0661.

  
Justin Fischer

June 19, 2003

  
STEVEN D. MAKI  
PRIMARY EXAMINER  
~~GROUP 1300~~  
A ✓ 1733 6-19-03